

REMARKS

This application was filed with 58 claims. Claims 1-37 and 53-58 were previously cancelled. Claims 46-58 were previously withdrawn. Claim 59 was previously added. Claims 39, 43, and 45 have been allowed. Claims 38, 40-42, 44 and 59 have been rejected. Therefore, Claims 38-59 are pending in the Application. Reconsideration of the application based on the arguments submitted below is respectfully requested.

Claim Rejections - 35 U.S.C. § 102(b)

Claims 38, 40, 42, 44 and 59 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Balch (U.S. Patent No. 4,205,718).

The rejection based on Balch is based on an impression stated in the Office Action that in Balch, the solar heat is transferred to a direct expansion system refrigerant fluid heat exchange means to the refrigerant fluid in a direct expansion system, with a pump provided for operating or terminating the solar heat transfer (implied to the direct expansion system). In fact, Balch's invention does not encompass a direct expansion system as required by the rejected claims. Balch's specific reference to the type of heat pump applicable to his invention is found at column 5, line 19, wherein Balch states: "The heat pump may be of any conventional type." Further, Balch's drawings all show a conventional heat pump type, which is well understood by those skilled in the art to be comprised of an air-source heat pump. Air source heat pumps currently comprise about 99% of the heat pump market, with about 99.5% of the remaining 1% primarily being comprised of

water-source geothermal heat pump system designs (which is neither shown nor referenced by Balch). Approximately 0.5% of the geothermal heat pump market is comprised of direct exchange/direct expansion (“DX”) heat pump system designs. The conventional air-source heat pump system disclosed by Balch will not operate as a DX system as disclosed by Applicant. Although some aspects of air-source heat pumps and DX heat pumps are similar, the fundamental operative technologies are different. The differences between conventional heat pump systems and DX systems are well understood by those skilled in DX heat pump art.

Further, upon close examination, it is apparent that the solar heat transfer and storage mechanisms utilized by Applicant are significantly different from those disclosed by Balch. For example, Balch utilizes upper and lower heat transfer jackets buried in the ground (column 8, lines 27 – 39), whereas Applicant utilizes an insulated tube within a geothermally exposed pipe design, together with an above-ground containment design. The water flow and solar heat transfer designs between Balch and Applicant’s invention significantly differ. Balch’s invention comprises ducts for selectively circulating fluids between the conventional heat pump and the upper and lower heat transfer jackets of the buried thermal unit (see Balch’s Abstract {57}). Applicant’s invention provides an above-ground means, of a completely different design, to transfer geothermal and solar heat to the copper tubing of a DX system.

For the foregoing reasons, Applicant respectfully submits that the rejection of Claims 38, 40, 42, 44 and 59 under 35 U.S.C. § 102(b) should be withdrawn.

Claim Rejections - 35 U.S.C. § 103

Claim 41 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Balch. In response, Applicant repeats and incorporates by reference his above reply pertaining to the rejection under 35 U.S.C. §102.

In addition, the Office Action then concedes that Balch does not disclose the refrigerant fluid heat exchange means at an elevation above the solar heat collector. However, the Office Action alleges that the location of the refrigerant fluid heat exchanger with respect to the solar heat collector would be an obvious choice since there is no alleged critically or unexpected result (implied from any location selected). This is incorrect. In a DX system design, system operational efficiencies are of paramount importance. Any system operational power draw reduction is of great and critical importance in a DX system design. The ability of a particular design to eliminate the power draw required by a water circulator pump could increase the system's overall efficiencies by a factor of between 5% and 20%, depending on the size requirements of the particular pump, as dictated by varying flow rates, head pressures, and line distance requirements. The ability to reduce the system's overall power requirements by even one full percentage point in a DX system could mean the difference in qualifying for a tax credit under the new Energy Bill, and/or in qualifying for various utility rebate programs based upon overall system efficiency levels. Applicant's invention is not one of merely placing the solar heat collector at a different location, it includes a water flow design within the collector itself, as well as within the water to refrigerant fluid heat exchanger,

that will operate totally via natural heat convection, all without the need for any water pump power consumption at all. Balch's invention neither disclosed nor taught such an energy saving design, which is of critical importance in a DX system, particularly as the new U.S. Energy Bill imposes higher efficiency standards upon DX systems.

Applicant has commented on some of the distinctions between the cited references and the claims to facilitate a better understanding of the present invention. This discussion is not exhaustive of the facets of the invention, and Applicant hereby reserves the right to present additional distinctions as appropriate. Furthermore, while these remarks may employ shortened, more specific, or variant descriptions of some of the claim language, Applicant respectfully notes that these remarks are not to be used to create implied limitations in the claims and only the actual wording of the claims should be considered against these references.

Pursuant to 37 C.F.R. § 1.136(a), Applicant petitions the Commissioner to extend the time for responding to the May 10, 2005, Office Action for three months from August 10, 2005, to November 10, 2005. Applicant encloses herewith a check in the amount of \$510 made payable to the Director of the USPTO for the petition fee.

The Commissioner is authorized to charge any deficiency or credit any overpayment associated with the filing of this Response to Deposit Account 23-0035.

Respectfully submitted,


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ATTORNEY FOR APPLICANT

CERTIFICATE OF FIRST CLASS MAILING

I hereby certify that this Response in Application Serial No. 10/616,701 having a filing date of July 10, 2003, and a check in the amount of \$510, are being deposited with the United States Postal Service as first class mail in an envelope addressed to:

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

on November 10, 2005.

Mark J. Patterson


Signature
Registration Number 30,412


Date